11-161

*Session: workshop/seminar*

**Teaching algebra to engineering freshers in three week**

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**Abstract**

Modern undergraduates join science and engineering courses with poorer mathematical background than in the past. University tutors spend more and more time delivering remedial teaching classes. When doing so, most rely on traditional methods of delivery. However, such methods presuppose that the learners have a good memory and a considerable time to practice. These suppositions are particularly unrealistic when dealing with large groups of undergraduates who are so-called ordinary learners, that is, have limited mathematics background, limited memory, limited proficiency in explanatory reasoning, limited interest in the subject and on top of that, limited time to cover a large amount of material and limited study skills, all aggravated by a limited contact with teachers. Yet, these disadvantages can be overcome when dealing with adult learners. The seminar will be devoted to a specific approach, based on Socratic Dialogue and Eulerian Sequencing, to teaching all the algebra that an engineering student needs in just three weeks. Common student misconceptions will be discussed and ways to overcome them. Progress will be reported in developing a Cognitive Tutor e-PACT (electronic Personal Algebra and Calculus Tutor) based on the above ideas. As such the seminar will touch on the conference themes of global challenges to engineering education, the changing HE environment, student engagement, enhancing engineering education and exploiting technological change.